

AMENDMENTS TO THE DRAWINGS

Please make the following amendment to the drawings.

Replace Figure 2 with the replacement sheet for this figure.

REMARKS

1. Preliminary Remarks

a. Status of the Claims

Claims 1-31 are pending in this application. Claims 14-16 and 18-31 are withdrawn for being drawn to a non-elected invention. Claims 1, 5, 6, and 8 are amended. Claims 4 and 17-20 are canceled without prejudice. Applicant respectfully requests entry of the remarks and amendments made herein into the file history of the application. Upon entry of the amendments, claims 1.

b. Amendment to the Claims

As discussed above, claims 14-16 and 18-31 have been withdrawn whereby the Applicant will request rejoinder of the prosthesis claims upon notification of allowance of the brake claims. Claim 1 has been amended to be directed in part to a friction brake assembly comprising a control circuit to operate selectively the first and second actuator. Support for claim 1 can be found throughout the specification, for example, on paragraph 34, which discusses the control circuit. Similarly, dependent claims 5 and 6 are amended in a similar manner to be further be directed to how the control circuit acts in concert with shape memory alloy elements and supplies an electrical current to one of the elements. Again, support for these amendments can be found in paragraph 34 of the specification. Amended claim 8 is directed in part to the friction brake assembly to claim 7 wherein said carrier includes a member extending radially relative to said drum and said actuators act between said second component and said member. No new matter has been added via the amendments.

c. Amendments to the Drawings

On page 3 of the Office Action, the Examiner objected to the drawings under 37 C.F.R. §1.83(a) for failing to include reference sign "56" as discussed in the detailed description. Figure 2 has been replaced to provide previously omitted element 56 as well as add element 54. Support for elements 54 and 56 can be found throughout the specification for example, paragraph 32 in combination with Figure 2. The corrected drawing sheet is in compliance with 37 C.F.R. §1.121(d). Applicant submits that no new matter has been added. Applicant respectfully requests that the objection to the drawings under 37 C.F.R. §1.83(a) has been overcome and should be withdrawn.

d. Information Disclosure Statement

On page 2 of the Office Action, the Examiner asserts that the list of references may not be incorporated into a specification and must be submitted in a separate paper under 37 C.F.R.

§1.98(b). Applicant will be submitting these references under separate cover in the near future.

e. Oath/Declaration

On page 2 of the Office Action, the Examiner objects to the oath/declaration for failing to identify the application or filing date. Applicant is in the process of executing a new declaration that is compliant with 37 C.F.R. §1.67(a) and will submit under separate cover.

2. Patentability Remarks**a. 35 U.S.C. §112, Second Paragraph**

On pages 4 and 5 of the Office Action, the Examiner rejects claims 8-12 under 35 U.S.C. §112, second paragraph, for being indefinite. Specifically, the Examiner asserts that phrase “spaced locations on said component and said member, respectively is not understood. As discussed above, claim 8 has been amended in part to change this phrase to “said second component and said member.” Applicant submits that this amendment clearly shows the positioning of the actuators and its movement into or out of engagement with the drum. In view of the foregoing amendment, Applicant respectfully requests that the rejection of claims 8-12 under 35 U.S.C. §112, second paragraph, has been overcome and should be withdrawn.

b. 35 U.S.C. §103(a)

On pages 5 and 6 of the Office Action, the Examiner rejects claims 1-3 and 5-13 under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,831,417 (hereafter “Chu”) in view of JP 03037433 (hereafter “Youichirou”). Specifically, the Examiner asserts Chu shows a friction brake assembly that has the components of the claimed invention except it lacks a second actuator to the release the brake. The Examiner asserts that the secondary reference Youichirou teaches a gear brake actuated by two SMA actuators that engage a gear brake while the actuator releases the gear brake. The Examiner alleges that one of skill would modify Chu’s brake to include a second SMA actuator in order to properly release the brake as taught by Youichirou. Applicant respectfully disagrees.

Specifically, Chu discloses in figure 5 the use of a SMA wire 305c to pull a brake shoe 337 against a brake drum 339 with short and crisp jabs, simulating the light pressure applied to a fishing line on the spool by the angler. A decision making apparatus 309 controls the SMA wire 305c, brake shoe 337, and brake drum 339 combination in order to produce short and crisp jabs, i.e. to apply

tension rather than to completely stop movement. Although Chou does use a shape memory alloy element, it does not teach:

“a first actuator including at least one shape memory alloy element, said first actuator being operable upon said carrier to move said friction pad into engagement with said brake member;
a second actuator including at least one shape memory alloy element, said second actuator being operable upon said carrier to move said friction pad away from said brake member.”

The secondary reference Youichirou fails to overcome the failings of Chou. Specifically, Youichirou appears to disclose a gearwheel apparently rotatable upon an axis wherein the gearwheel has peripheral teeth for engagement with a toothed member for preventing rotation of the gearwheel. The toothed member appears to be carried by a first and second elastic members, which are deformable by electrification of first and second shape memory alloy members to move the toothed member into and out of engagement with the teeth of the gearwheel respectively. Although Youichirou does use shape memory alloy elements, it does not teach:

“a first actuator including at least one shape memory alloy element, said first actuator being operable upon said carrier to move said friction pad into engagement with said brake member;
a second actuator including at least one shape memory alloy element, said second actuator being operable upon said carrier to move said friction pad away from said brake member.”

If the teeth in part 4b of Youichirou are regarded as a brake member and the top end part 2b of the elastic body 2 as the combination carrier/friction pad, it is clear that only one actuator rather than two moves both the top end part 2b into engagement with and away from the teeth part 4b, namely the actuator comprising parts 2, 2a, 2b and 3. The other actuator of Youichirou comprising parts 5, 5a, 5b and 6 does not “move” the top end part 2b, it is actually not connected to it at all, its purpose is simply to “touch” the back surface of the top end part 2b to keep it in place. Accordingly, Youichirou does not teach two actuators in a similar manner as the claimed invention.

Furthermore, Applicant submits that the positive locking as disclosed in Youichirou, and frictional braking, as claimed in the current application, are not equivalent effects. Gears and teeth are specifically used to stop rotation abruptly as soon as contact is made while friction slows down rotation until it is stopped. Thus, the use of gears and teeth is not interchangeable with a friction pad since the resulting braking effects are quite different. This is especially true where smooth transitions are required as is the case with prostheses.

Accordingly, Applicant submits that neither Youichirou nor Chu teach a first actuator operable upon said carrier to move said friction pad into engagement with said brake member and a

second actuator operable upon said carrier to move said friction pad away from said brake member. As previously explained, in Youichirou the other presumed actuator which comprises parts 5, 5a, 5b and 6 does not “move” the top end part 2b, it is actually not connected to it at all, its purpose is simply to “touch” the back surface of the top end part 2b to keep it in place, it does not retract it. As for Chu, the Examiner acknowledges that it lacks a second actuator to release the brake.

Applicant further submits that Chu does not teach or suggest using the device taught by Youichirou and that the two devices serve different purposes as Chu discloses a device to apply tension, not to completely stop movement, while Youichirou discloses a device to completely stop movement, not to apply tension. Accordingly, one of skill would not expect the combination of Chu in view of Youichirou to be successful because, as previously mentioned, the use of gears and teeth is not interchangeable with a friction pad since the resulting braking effects are quite different.

Applicant therefore submits that amended claim 1 is patentable over Chu and Youichirou, taken individually or in combination, and that directly or indirectly dependent claims 2, 3 and 5-13 are also patentable over Chu and Youichirou for at least the same reason. In view of the foregoing amendments and remarks, Applicant respectfully requests that the rejection of claims 1-3 and 5-13 under 35 U.S.C. §103(a) over Chu in view of Youichirou has been overcome and should be withdrawn.

3. Conclusion

Applicant respectfully submits that the instant application is in good and proper order for allowance and early notification to this effect is solicited. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the instant application, the Examiner is encouraged to call the undersigned at the number listed below.

Respectfully submitted,

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